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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/799,468
Filing Date: March 11, 2004
Appellant(s): PRINDIVILLE, CASEY

MAILED

JUL 14 2006

GROUP 1700

J. Mike Anerson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 19, 2006 appealing from the Office action mailed November 21, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,933,219	Sakumoto et al	6-1990
6,080,263	Saito et al	6-2000
6,025,212	VanNortwick et al	2-2000

3,788,572 Wroblewski 1-1974

JP 11-123471 Tsukagoshi 5-1999

English Abstract of JP 11-123471

English Machine Translation of JP 11-123471

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 21-31 and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakumoto et al (U.S. 4,933,219) in view of Saito et al (U.S. 6,080,263), VanNortwick et al (U.S. 6,025,212), and Tsukagoshi (JP 11-123471).

Regarding claims 21, 25, and 26, Sakumoto et al discloses a method of applying an adhesive tape for die bonding. The method includes providing an adhesive tape with a release film, i.e. coverlay, peeling off the coverlay to expose the adhesive portion of the tape, punching the tape into a definite length, applying the punched portion at a temperature from 80°C to 120°C, Then applying an IC chip onto the adhesive portion and heating the assembly to 120°C to 150°C for bonding. (Col 4, lines 12-24) The adhesive tape is a heat activated adhesive, since application of the tape required the tape be heated to a temperature of 80°C to 120°C. Sakumoto et al is silent as to

providing means for performing these steps. However, one of ordinary skill in the art reading Sakumoto et al would appreciate providing any combination of means to perform these steps. For example, providing a means to remove the coverlay is well known and conventional as shown by Saito et al. Saito et al discloses a method for applying an adhesive film to a semiconductor wafer. The method includes providing an adhesive tape with a release liner, removing the release liner from the adhesive tape with a drive roller and a pinch roller prior to applying the tape. (Col 3, lines 10-28 and Col 5, lines 19-42)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove a release liner, i.e. coverlay film, by providing a means such as a drive and pinch rollers or wheels assembly to remove the coverlay film prior to applying the tape as disclosed by Saito et al in the method of Sakumoto et al to protect the adhesive on the tape and to allow easier removal of the tape from the reel. Sakumoto et al as modified by Saito et al is silent as to providing means to cut and applying the portion of the adhesive tape to the lead frame. However, providing a means to cut and apply the portion of the adhesive tape to the lead frame is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses an apparatus for applying a tape to lead-on-chip lead frame. The apparatus includes a length of adhesive tape on reels, drive mechanism for advancing the length of adhesive tape, an adhesive tape cutting assembly attachment, with a film cutting blade on the cutter block for cutting and attaching the tape by pressing the tape to the frame, and a support frame, i.e. wire lead frame, handler or feeder for guiding and

feeding support frame to the location for applying the tape. (Col 3, lines 54-60, Col 4, lines 32-36, Col 4, line 61 to Col 5, line 8, Col 5, lines 59-63, Col 6, lines 7-14)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the adhesive tape on reel, drive mechanism for advancing the length of adhesive tape, a cutting assembly with a cutter block for cutting and attaching the adhesive tape portion to the lead frame, and a wire lead frame handler or feeder for guiding and feeding the frame to the tape applying location as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by Saito et al to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15) Sakumoto et al as modified by the combination of references is silent as to the cutting blade is situated relative to the block. However, providing a cutting blade relative to the block is well known and conventional as shown for example by Tsukagoshi. Tsukagoshi discloses an apparatus for punching adhesive tape for thermocompression bonding to a lead or IC chip. The apparatus includes a punch and a die, both with cutting edges to punch out a portion of the adhesive tape for lead bonding. (See Machine Translation of JP 11-123471, Paragraph 13)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide cutting edges or blades on both the punch, i.e. block, and die as disclosed by Tsukagoshi in the method of Sakumoto et al as modified by the combination of references to provide a clean cut without burr. (See Tsukagoshi, Machine Translation of JP 11-123471, Paragraph 13)

Regarding claims 22 and 23, Sakumoto et al as modified above does recite the lead frame, which includes wire bond slots, but is silent as to the apparatus is configured to attach the adhesive film to cover 70% to 98% of the wire bond slot. However, configuring the apparatus to attach the adhesive film or tape to cover 70% to 98% of the wire bond slot is well known and conventional as shown for example by VanNortwick et al. The apparatus as disclosed by VanNortwick et al discloses the tape feed rollers (46, 48) are drivably connected to stepping motors to drive the feed rollers a predetermined complete or partial revolutions and move the tape a corresponding linear amount or length into the tape cutter (Col 4, lines 25-36), which allow a user to modified the amount of tape to be applied to the support and to provide a cover for any support element covering any amount such about 70% to 98% of a wire bond slot on a support element. In any event, one of ordinary skill in the art would appreciate modifying the amount of tape to be feed into the tape cutter to logically use the only amount of tape required to cover the support element.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to logically provide modified the amount of tape feed into the tape cutter as disclosed in the apparatus of VanNortwick et al in the method of Sakumoto et al as modified by combination of references to allow a user to easily apply just the required amount of tape the support element.

Regarding claim 24, Sakumoto et al as modified above is silent as to apparatus includes a film guide. However, providing a film or tape guide is well known and

conventional as shown for example by VanNortwick et al. VanNortwick et al discloses groove (92) for guiding tape onto the cutting block. (Col 6, lines 8-14)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an adhesive tape guide as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by combination of references to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15)

Regarding claims 27 and 28, Sakumoto et al as modified above is silent as to the driven assembly includes a first push wheel and a second push wheel with the first push wheel is in engagement with first side of the adhesive tape and the second push wheel is in engagement with the second side of the adhesive tape and the push wheel is pressed into engagement with the adhesive tape by a spring. However, providing the driven assembly includes a first push wheel and a second push wheel with the first push wheel is in engagement with first side of the adhesive tape and the second push wheel is in engagement with the second side of the adhesive tape and the push wheel is pressed into engagement with the adhesive tape by a spring is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses the feed rollers (46 and 48) are mounted opposite side of adhesive tape and is spring loaded to permit tensioning of the tape. (Col 4, lines 25-36)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the driven assembly includes a first push wheel and a

second push wheel with the first push wheel is in engagement with first side of the adhesive tape and the second push wheel is in engagement with the second side of the adhesive tape and the push wheel is pressed into engagement with the adhesive tape by a spring as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by combination of references to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15)

Regarding claims 29-31, Sakumoto et al as modified above does not a wheel assembly to remove the coverlay film from the adhesive film. However, a coverlay film over the adhesive tape to protect the adhesive on the tape until use and a wheel assembly to remove the coverlay film from the adhesive film is well known and conventional as shown for example by Saito et al. Saito et al discloses a method for applying an adhesive film to a semiconductor wafer. The method includes providing an adhesive tape with a release liner, removing the release liner from the adhesive tape with a drive roller and a pinch roller, which provided friction force between the drive roller and the pinch roller prior to applying the tape. (Col 3, lines 10-28 and Col 5, lines 19-42)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide drive and pinch rollers or wheels assembly to remove the coverlay film prior to applying the tape as disclosed by Saito et al in the method of Sakumoto et al as modified by the combination of references to protect the adhesive on the tape and to allow easier removal of the tape from the reel.

Regarding claim 35, Sakumoto et al as modified above is silent as to a piston is operably coupled to the block to displace the block. However, providing a piston to operably coupled to the block to displace the block is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses the cutter block is driven up and down on guideposts by a hydraulic cylinder, which includes a piston. (Col 6, line 66 to Col 7, line 4)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a piston to operably coupled to the block as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by combination of reference to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15)

Regarding claim 36, Sakumoto et al as modified above is silent as to a vacuum passage situated and configured to hold the desired portion of the adhesive tape on the block by vacuum pressure. However, providing a vacuum passage situated and configured to hold the desired portion of the adhesive tape on the block by vacuum pressure is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses the cutter block includes vacuum passages to apply a vacuum force to the tape. (Col 6, lines 25-35)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a vacuum passage situated and configured to hold the desired portion of the adhesive tape on the block by vacuum pressure as disclosed by

VanNortwick et al in the method of Sakumoto et al as modified by combination of references to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15)

3. Claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakumoto et al (U.S. 4,933,219) in view of Saito et al (U.S. 6,080,263), VanNortwick et al (U.S. 6,025,212), and Tsukagoshi (JP 11-123471) as applied to claim 30 above, and further in view of Wroblewski (U.S. 3,788,572).

Regarding claims 32 and 33, Sakumoto et al as modified above is silent as to the apparatus comprises of an idler assembly positioned downstream of the drive wheel assembly. However, providing an idler roll assembly positioned downstream of the drive wheel assembly to allow tension of the tape to be adjusted and providing an idler assembly positioned downstream of the drive wheel assembly is well known and conventional as shown for example by Wroblewski. Wroblewski discloses a strip take-up device. The device includes a strip tension sensing assembly where the idler assembly is positioned downstream of the drive wheel assembly, which retract and extend in responds to the tension in the strip to add or eliminate slack to the strip. (Col 7, line 56 to Col 8, line 64 and Figures 1A, 3, 4, and 6)

It would have been obvious to one skilled in the art at the time the invention was made to provide an idler assembly positioned downstream of the drive wheel assembly as disclosed by Wroblewski in the method of Sakumoto et al as modified by combination of references to allow the tension in the strip to be adjusted by adding or

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eliminating the slack in the strip to prevent the tape from breaking or fouling the mechanism without the need to use expensive limit switch. (See Wroblewski, Col 2, lines 10-13)

Regarding claim 34, Sakumoto et al as modified above is silent as to the idler assembly includes a spring biasing the idler roller in a downstream direction. However, using a spring to biasing the idler roller in a downstream direction is well known and conventional as shown for example by Wroblewski. Wroblewski discloses a spring is used to bias the idler roller in the downstream direction. (Figures 1A, 3, 4, and 6) It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a spring to bias the idler roller as disclose by Wroblewski in the method of Sakumoto et al as modified by combination of references to allow the tension in the tape to be adjusted to prevent breakage or fouling of the mechanism without the need to use expensive limit switch. (See Wroblewski, Col 2, lines 10-13)

(10) Response to Argument

In response to applicant's argument of no suggestion or motivation to combine the references, the examiner disagrees, since as the applicant has pointed out Sakumoto et al discloses a method of providing an adhesive with a release film, i.e. coverlay, unwinding the tape form a reel, removing the coverlay, punching or cutting the tape and applying the punched or cut tape to a lead frame at a temperature of from 80°C to 120°C. (See Sakumoto et al, Col 4, lines 12-19) Therefore, the suggestion for providing and combining the references is provided by the method of Sakumoto et al,

which provided the examiner as a guide for means that are well know and generally available to one of ordinary skill in the art.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument of VanNortwick does disclose cutting the adhesive film strip to cover from 70% to 90% of a wire bond slot, the examiner agrees, however, the recitation is intended use or a method step in an apparatus claim, therefore, the requirement is satisfied if the apparatus cited in the rejection is capable of performing the required step. The apparatus as disclosed by VanNortwick includes a tape feeder drivably connected to stepper motors and adapted to drive the tape feed rollers through predetermined complete or partial revolutions to move the tape a corresponding linear amount, which if an open slot of a lead frame is positioned above the predetermined length of tape would cover any desired amount of the open slots. (See VanNortwick et al, Col 4, lines 35-36) Therefore, the apparatus is capable of performing the method step and satisfies the requirement of the claims.

In response to applicant's argument of the references do not suggest or disclose a piston that is adapted to move a displaceable block between the first and second distances as recited in claim 35, the examiner disagrees, VanNortwick discloses the apparatus with displaceable cutter blocks or dies are adapted to be driven up and down on the guide posts by hydraulic cylinder, which includes a piston. (See VanNortwick et al, Col 6, line 55 to Col 7, line 4)

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Chan Sing Po

SPC

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